

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Amended) A thermal processing unit for conducting a thermal process to a plurality of objects to be processed held in a tier-like manner in a processing container, wherein

the processing container is made of metal,

a heating unit that heats the objects to be processed, and a cooling-gas introducing unit having a plurality of blowing holes for introducing a cooling gas into respective areas in the processing container divided in a height direction of the objects to be processed, are provided in the processing container,

a circular space is formed between the processing container and the plurality of objects to be processed held in a tier-like manner,

the cooling-gas introducing unit is a cooling-gas introducing pipe arranged in the circular space and extending in a vertical direction,

the plurality of blowing holes is formed at suitable intervals in the vertical direction of the cooling-gas introducing pipe, and

each blowing hole is formed at a pipe wall of the cooling-gas introducing pipe in order to blow out the cooling gas in a tangential direction of the circular space.

6. A thermal processing unit according to claim 5, wherein a plurality of cooling-gas introducing pipes is arranged at suitable intervals in a circumferential direction of the circular space.

7. A thermal processing unit according to claim 5, wherein the plurality of cooling-gas introducing pipes has different lengths in the vertical direction.

8. (Amended) A thermal processing unit for conducting a thermal process to a plurality of objects to be processed held in a tier-like manner in a processing container, wherein

the processing container is made of metal,

a heating unit that heats the objects to be processed, and a cooling-gas introducing unit having a plurality of blowing holes for introducing a cooling gas into respective areas in the processing container divided in a height direction of the objects to be processed, are provided in the processing container, and

the blowing hole is provided with a porous member.

9. (Amended) A thermal processing unit according to any of claims 5 to 8, wherein

the processing container has a volume of about 170 liter, and

the cooling-gas introducing unit is capable of introducing a cooling gas into the processing container at a flow rate of 300 to 500 liter / min.

10. (Amended) A thermal processing unit according to any of claims 5 to 9, wherein

the processing container has a container-cooling unit in which a coolant flows.

11. A thermal processing unit according to claim 10, wherein

the cooling-gas introducing unit and the container-cooling unit are capable of cooling the objects to be processed to a temperature of 400 °C to 100 °C at a temperature-fall rate not less than about 40 °C / min.

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8. (Amended) A thermal processing unit for conducting a thermal process to a plurality of objects to be processed held in a tier-like manner in a processing container, wherein

the processing container is made of metal,

a heating unit that heats the objects to be processed, and a cooling-gas introducing unit having a plurality of blowing holes for introducing a cooling gas into respective areas in the processing container divided in a height direction of the objects to be processed, are provided in the processing container, and

the blowing hole is provided with a porous member.

12. <sup>Added</sup>

9. (Amended) A thermal processing unit according to any of claims 5 to 8, wherein

the processing container has a volume of about 170 liter, and

the cooling-gas introducing unit is capable of introducing a cooling gas into the processing container at a flow rate of 300 to 500 liter / min.

13. <sup>Added</sup>

10. (Amended) A thermal processing unit according to any of claims 5 to 9, wherein

the processing container has a container-cooling unit in which a coolant flows.

14. <sup>(Added)</sup>

11. A thermal processing unit according to claim 10, wherein

the cooling-gas introducing unit and the container-cooling unit are capable of cooling the objects to be processed to a temperature of 400 °C to 100 °C at a temperature-fall rate not less than about 40 °C / min.